

Features

- $V_{DS}=100V, I_D=35A$
- $R_{DS(ON)}=16m\Omega$ (TYP.) $V_{GS}=10V$
- $R_{DS(ON)}=22m\Omega$ (TYP.) $V_{GS}=4.5V$
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance
- High Current Capability

Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion

Ordering Information

Device	package	Device Marking	Package Qty.
EMB12N10VS	PDFN3333	**	5000/PCS

Absolute Maximum Ratings (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V _{GS} =0V)	V _{DS}	100	V
Gate-Source Voltage (V _{GS} =0V, static)	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	35	A
Continuous Drain Current (T _C =100°C)		25	A
Pulsed Drain Current	I _{DM}	120	A
Single Pulsed Avalanche Energy	E _{AS}	83	mJ
Maximum Power Dissipation (T _C =25°C)	P _D	6.2	W
Maximum Power Dissipation (T _C =100°C)		5.5	W
Operating, Storage Temperature Range	T _J , T _{STG}	-55~150	°C

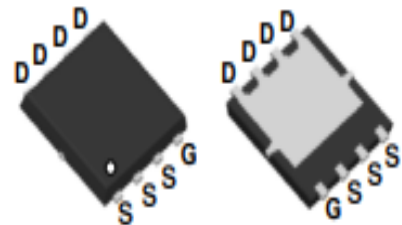
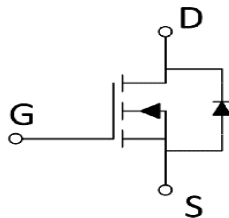
Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	-	1.8	-	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	-	62	-	°C/W

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
Gate -Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1	1.8	3	V
Drain-Source On-stage Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	12	17	mΩ
		V _{GS} =4.5V, I _D =20A	-	15	25	

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Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=15V$	-	2996	-	pF
Output capacitance	C_{oss}	$V_{GS}=0V$	-	1206	-	
Reverse transfer capacitance	C_{rss}	$f=1MHz$	-	230	-	
Gate Resistance	R_g	$f=1MHz$	-	1.5	-	Ω
Total Gate Charge	Q_g	$V_{DS}=15V$	-	15.9	-	nC
Gate Source Charge	Q_{gs}	$V_{GS}=10V$	-	2.9	-	
Gate Drain Charge	Q_{gd}	$I_D=20A$	-	3.3	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10V$	-	6.3	-	ns
Rise time	t_r	$V_{DS}=15V$	-	2.7	-	
Turn-off delay Time	$t_{d(off)}$	$R_L=0.75\Omega$	-	18.6	-	
Fall time	t_f	$R_G=3\Omega$	-	4.2	-	
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=1A$	-		1.2	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=20A$	-	32	50	ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=500A/\mu s$	-	13.5	20	nC

Electrical Characteristics Diagrames

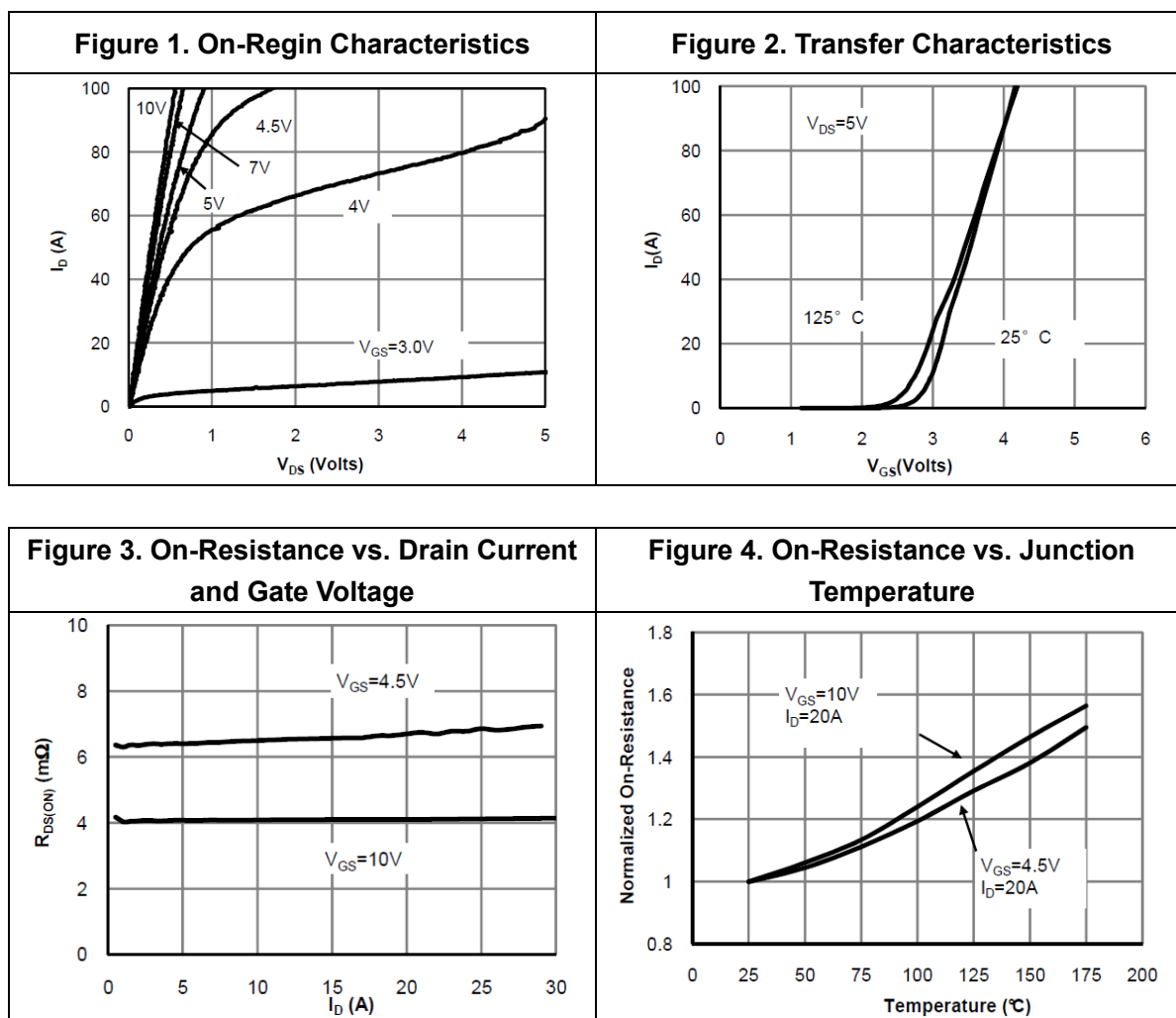


Figure 5. On-Resistance vs. Gate-Source Voltage

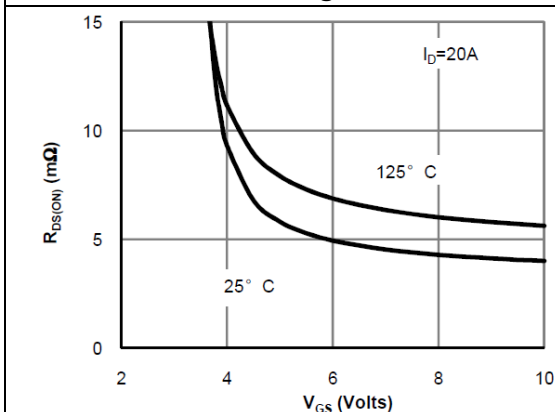


Figure 6. Body-Diode Characteristics

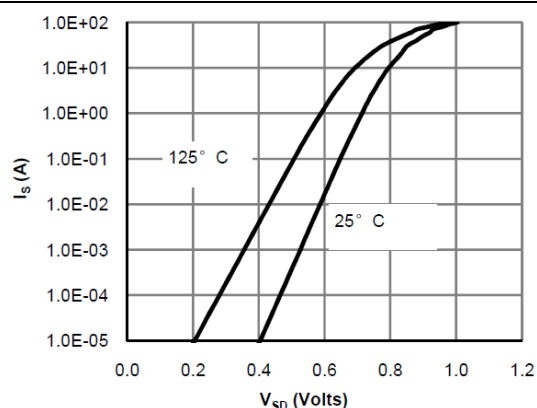


Figure 7. Gate-Charge Characteristics

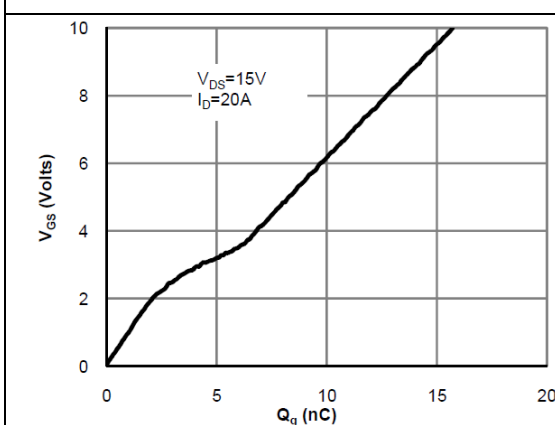


Figure 8. Capacitance Characteristics

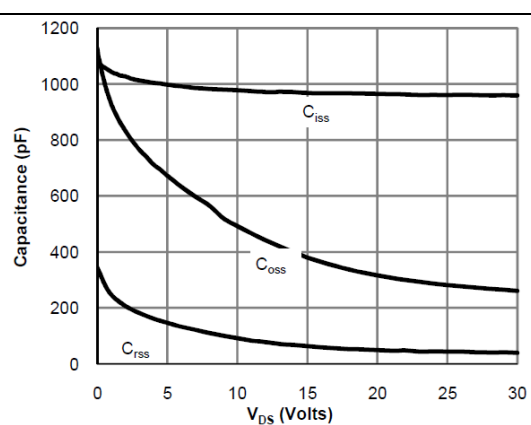


Figure 9. Maximum Forward Biased Safe Operating Area

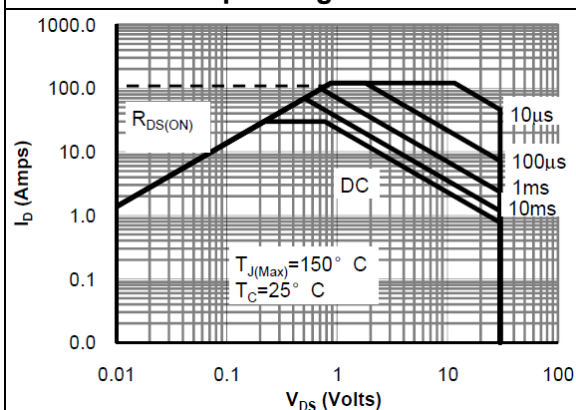
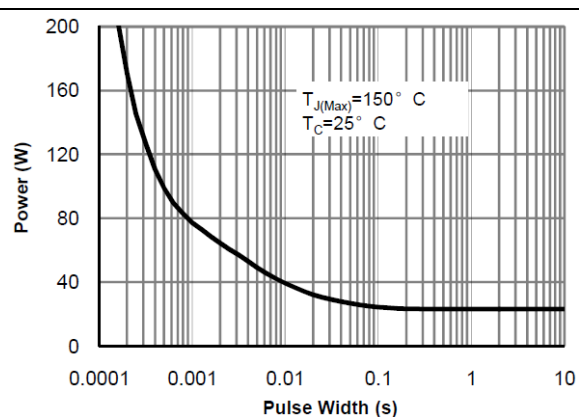


Figure 10. Single Pulse Power Rating Junction-to-Case



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